DRAFT

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ENVIRONMENT

Mike Schmoller
Project Manager
Wisconsin Department of Natural Resources
South Central Region
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Subject:
Building Interior Polychlorinated Biphenyl Investigation Summary, Madison-Kipp Corporation, 201 Waubesa Street, Madison, Wisconsin. Facility ID No. 113125320, BRRTS No. 02-13-001569

Date:
April 17, 2015

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Our ref:
WI001368.0024

Dear Mr. Schmoller:

On behalf of Madison-Kipp Corporation (MKC), this letter provides a summary of the supplemental subsurface investigation, wipe sampling, and indoor air sampling activities for polychlorinated biphenyls (PCBs) conducted within the manufacturing portion of the MKC facility located at 201 Waubesa Street, Madison, Wisconsin (Site).

This letter provides a summary of the investigation activities completed, analytical results, and recommendations. A Natural Resources 712.09 submittal certification is included in Attachment A.

**Background**

A *Supplemental Building Interior Polychlorinated Biphenyl Work Plan Subsurface Investigation Summary* (SI Report) was submitted to the Wisconsin Department of Natural Resources (WDNR) and United States Environmental Protection Agency (U.S. EPA) on April 22, 2014, to provide details of the investigation completed from December 2013 through February 2014. On August 27, 2014, ARCADIS met with the WDNR and U.S. EPA to discuss the next steps for addressing the soils containing PCBs beneath the building. At this meeting, U.S. EPA requested the completion of indoor air and surface wipe sampling activities, a technical justification submittal for management of PCB contaminated soils beneath the building, and additional soil investigation activities for beneath the building.

On October 22, 2014, a *Technical Justification – Polychlorinated Biphenyl (PCB)-Impacted Soils Beneath the Main Manufacturing Building* (Technical Justification) was submitted to the WDNR. The Technical Justification included the *Supplemental Work Plan for Polychlorinated Biphenyl Building Subsurface Investigation* (Subsurface Work Plan) as an attachment. On November 4, 2014, a *Work Plan for Polychlorinated Biphenyl Building Wipe Sampling* (Wipe Sampling Work Plan) was submitted to the WDNR and U.S. EPA for approval. The WDNR approved the Wipe Sampling Work Plan in electronic correspondence dated December 8, 2014.

On December 17, 2014, MKC met with the WDNR and U.S. EPA (via telephone) to discuss the Technical Justification (Subsurface Work Plan) and Wipe Sampling Work Plan submittals. During this meeting, U.S. EPA requested continuous soil sampling during the additional soil investigation, PCB homolog analysis for select soil sample locations, and installation and sampling of one monitoring well within the building as part of the Subsurface Work Plan. In addition, U.S. EPA requested preparation and submittal of a Quality Assurance Project Plan (QAPP) for the Wipe Sampling Work Plan. On December 18, 2014, ARCADIS, WDNR, and U.S. EPA participated in a conference call to discuss the proposed QAPP requirements.

Based on the December 17 and 18, 2014, communications, the Subsurface Work Plan was revised and submitted to the WDNR and U.S. EPA on January 22, 2015, and the *Quality Assurance Project Plan Building Interior Polychlorinated Biphenyl Wipe Sampling* (Wipe Sampling QAPP) was submitted to the WDNR and U.S. EPA on February 19, 2015. The Subsurface Work Plan was approved by WDNR in electronic correspondence dated January 23, 2015. The Wipe Sampling QAPP was approved by U.S. EPA in electronic correspondence dated February 25, 2015.

**Investigation Activities**

The following investigation activities were completed in accordance with the approved Subsurface Work Plan and Wipe Sampling QAPP. Details of these activities are presented below.

- March 2 through 5, 2015: Advanced six soil borings using a hand cart direct push rig, collected soil samples for laboratory analysis, and installed one monitoring well using a hollow-stem auger rig.

- March 4, 2015: Conducted wipe sampling activities.

- March 13, 2015: Collected a groundwater sample from the newly installed monitoring well for laboratory analysis.

- April 1, 2015: Conducted indoor air sampling activities.

- April 2, 2015: Conducted additional wipe sampling activities.

**Health and Safety**

Prior to beginning the investigations, the Site health and safety plan was updated to address the planned field activities. Utility marking arrangements were made through Digger's Hotline (the State of Wisconsin Public Utility clearance service), a private utility locater, and discussions with MKC.

**Soil Boring Advancement**

Advancement and sampling of the soil borings was initiated on March 2, 2015. The boring locations were selected based on historical analytical results and subsequent discussions with WDNR and U.S. EPA. The soil boring locations are presented on Figure 1.

From March 2 through 5, 2015, a total of six soil borings (B-196 through B-201) were completed adjacent to previous soil boring locations B-158, B-179, B-180, B-181, and north and south of B-182 in accordance with the approved Subsurface Work Plan. The soil borings were advanced using a direct-push hand-cart Geoprobe unit. Soil samples were collected by driving a steel sampling rod (sampler) with acetate liners to the desired sampling depth using the hydraulic ram and hammer on the Geoprobe rig. Once the sampler reached the desired depth, the sampler was opened by removing a stop pin in the sampler. The sampler was driven an additional 4 feet to push a soil sample into the sampler, preserving the sample in a 1.5-inch by 4-foot acetate liner inside the sampler. The acetate sleeves allowed for continuous collection of soil samples from each boring.

Companion sampling was completed at the soil boring locations by collecting two aliquots of soil from each sampling interval and placing each aliquot into a separate re-sealable plastic bag. One of the companion samples from each interval was used for field screening for the presence of total ionizable volatile organic compound vapors with a calibrated photoionization detector (PID). The screening samples were warmed and the headspace PID reading of the soil was taken by inserting the probe end of the PID into the plastic bag. Following field screening activities, the screened samples were

appropriately discarded; the unscreened companion samples were used for preparing samples for analytical testing.

An ARCADIS scientist was on Site to oversee the drilling activities and visually screen and describe the condition and properties of the soil. Soil descriptions and field screening PID results were recorded on Soil Boring Logs (WDNR Form 4400-122) in Attachment B. Borehole Abandonment Forms (WDNR Form 3300-005) are also included in Attachment B.

A total of six soil borings were advanced to depths ranging from 17.5 to 23.5 feet below ground surface (ft bgs). Below is a summary of the sampling plan.

- Soil borings were advanced to the water table or where refusal was encountered. Depths of refusal from subsurface obstructions and/or limitations of equipment were as follows: B-196 (18.5 ft bgs), B-197 (17.5 ft bgs), B-198 (23 ft bgs), B-199 (19 ft bgs), B-200 (23.5 ft bgs), B-201 (19 ft bgs). It is important to note that multiple attempts were made to advance the soil borings to the water table in each soil boring location. However, subsurface obstructions and/or limitations of equipment did not allow all borings to be advanced to the water table.

- Continuous soil sampling (one soil sample from each 3-foot interval) was conducted, per boring, from the ground surface to above the water table or where refusal was encountered.

- Soil samples were submitted for analysis based on PID screening and/or visual inspection.

- A total of two duplicate and two matrix spike/matrix spike duplicates samples were collected and analyzed in accordance with the Subsurface Work Plan.

- One soil sample from Soil Borings B-197 and B-199 was submitted for laboratory analysis of PCB homolog by U.S. EPA Method 680 in accordance with the Subsurface Work Plan. These samples were selected based on the highest detected PCB aroclor results.

- A total of 54 soil samples were collected and submitted to Environmental Chemistry Consulting Services, Inc. in Madison, Wisconsin, for analysis of PCB Aroclors by U.S. EPA Method 8082. A total of two soil samples were collected and submitted to Environmental Chemistry Consulting Services in Madison, Wisconsin, for analysis of PCB homolog by U.S. EPA Method 680.

**Monitoring Well Installation and Sampling**

The monitoring well location, adjacent to previous soil boring location B-152, was selected based on the December 17, 2014 meeting. The monitoring well location is presented on Figure 1.

A mini-hollow stem auger rig was used to advance the soil boring for collecting soil samples. Soil samples were collected using split-spoons from ground surface to the top of the water table. Companion sampling was completed by collecting two aliquots of soil from each sampling interval and placing each aliquot into a separate re-sealable plastic bag. One of the companion samples from each interval was used for field screening for the presence of total ionizable volatile organic compound vapors with a calibrated PID. The screening samples were warmed and the headspace PID reading of the soil was taken by inserting the probe end of the PID into the plastic bag. Following field screening activities, the screened samples were appropriately discarded; the unscreened companion samples were used for preparing samples for analytical testing.

An ARCADIS scientist was on Site to oversee the drilling activities and visually screen and describe the condition and properties of the soil. Soil descriptions and field screening PID results were recorded on Soil Boring Logs (WDNR Form 4400-122) and are included in Attachment B.

The soil boring was converted into a water table monitoring well. The monitoring well screen was installed at a depth of 27.7 to 37.7 ft bgs. The monitoring well consists of a single screen and was constructed and developed in accordance with NR 141 Wis. Adm. Code. A 10-foot, 0.010-inch, polyvinyl chloride screen and Schedule 40 polyvinyl chloride riser was used. The monitoring well was completed at the surface with a flush-mount well compartment set in concrete. The well construction form (WDNR Form 4400-113A) was completed and is included in Attachment C.

The goal of well development is to produce groundwater samples that are representative of the water quality in the target interval, and to minimize sediment, drill cuttings and drilling fluids in the samples. The monitoring well was developed by surging and pumping with a surge block. The well development form (WDNR Form 4400-113B) was completed and is included in Attachment C.

On March 13, 2015, one groundwater sample was collected and submitted to Environmental Chemistry Consulting Services in Madison, Wisconsin, for analysis of dissolved PCBs by U.S. EPA Method 8082 using low-flow sampling techniques. Field

parameters were recorded using a multi-parameter meter for pH, conductivity, dissolved oxygen, redox potential, and temperature.

**Wipe Sampling**

A 100- by 100-foot grid pattern was used for the manufacturing footprint of the MKC facility to facilitate wipe sampling activities. The wipe sample locations are presented on Figure 2.

On March 4, 2015, wipe samples were collected from various surfaces (wall, column, floor, machine-horizontal, and machine-vertical) throughout the manufacturing portion of the MKC facility. Sample locations within each pre-approved grid were determined in the field based on visual observations and accessibility.

Wall, column, and vertical machine wipe samples were collected from the approximate breathing/working-zone height of a worker. Samples were collected by taking an individual cotton gauze pad, placing it ¾ of the way into the 80/20 iso-octane/acetone solution, squeezing the excess solution off the gauze pad, placing the 10- by 10-centimeter template over the determined sample area, and wiping the sample area in a serpentine pattern both horizontally and vertically. The gauze pad was then folded and placed in a clean laboratory-supplied vial in accordance with the QAPP. A total of two duplicate samples were collected and analyzed in accordance with the Wipe Sampling QAPP. The wipe sampling log is provided in Attachment D. A total of 40 soil samples were collected and submitted to Environmental Chemistry Consulting Services, Inc. in Madison, Wisconsin, for analysis of PCB Aroclors by U.S. EPA Method 8082.

On April 2, 2015, wipe samples were collected from floor surfaces based on the March analytical results. Samples were collected by taking an individual cotton gauze pad, placing it ¾ of the way into the 80/20 iso-octane/acetone solution, squeezing the excess solution off the gauze pad, placing the 10- by 10-centimeter template over the determined sample area, and wiping the sample area in a serpentine pattern both horizontally and vertically. The gauze pad was then folded and placed in a clean laboratory-supplied vial in accordance with the QAPP. The wipe sampling log is provided in Attachment D. A total of six soil samples were collected and submitted to Environmental Chemistry Consulting Services, Inc. in Madison, Wisconsin, for analysis of PCB Aroclors by U.S. EPA Method 8082.

**Indoor Air Sampling**

Based on the results of the wipe sampling (presented below), indoor air sampling within the manufacturing building was initiated. A total of three indoor air locations were identified in the manufacturing building for sampling. The sample locations were collected within close proximity to the two wipe sample results above criteria from March 4, 2015, and within the middle of the manufacturing building along the center aisle. The indoor air sample locations are presented on Figure 2.

On April 1, 2015, three indoor air samples were collected for analysis of PCB Aroclors by EPA Method TO-10A. The indoor air samples were collected over an eight hour timeframe with low-volume air samplers and polyurethane foam sorbent cartridges.

After collection, the indoor air samples were packaged, placed in a cooler with ice, and submitted to Pace Analytical Services, Inc. in Schenectady, New York for PCB Aroclor analysis by Method TO-10A.

**Surveying**

A Wisconsin-licensed surveyor located the horizontal location of each boring to Wisconsin state plane coordinates and vertical elevation. Ground elevations were surveyed to an accuracy of +/-1 foot.

**Investigative-Derived Waste**

Soil cuttings generated during the investigation were containerized in appropriate steel 55-gallon drums for waste profiling and disposal off Site. Non-hazardous development, purge, and decontamination water was collected and disposed of with MKC facility wastewater.

## Evaluation of Results and Recommendations

The following sections present a summary of the regulatory criteria, analytical results, and recommendations.

**Regulatory Criteria**

The WDNR Remediation and Redevelopment Program has prepared a spreadsheet with industrial direct contact residual contaminant levels (RCLs) for chemicals,

calculated using the U.S. EPA Regional Screening Table web calculator. The industrial RCLs for PCBs are summarized in Table 1.

Title 40 Code of Federal Regulations §761.61 provides cleanup and disposal options for PCB remediation waste. Soil PCB analytical results were compared to the bulk remediation waste cleanup level for high occupancy cleanup level of less than or equal to 1 milligram per kilogram (mg/kg) and a Toxic Substance Control Act (TSCA) total PCB concentration of greater than or equal to 50 mg/kg to determine soil disposal options. These criteria are summarized in Table 1.

The analytical results of the groundwater sample were compared to the Natural Resources 140.10 Wis. Adm. Code Preventative Action Limits and Enforcement Standards. These criteria are summarized in Table 2.

The analytical results of the wipe samples were compared to the U.S. EPA *Wipe Sampling and Double Wash/Rinse Cleanup as recommended by the U.S. EPA PCB Spill Cleanup Policy* dated June 23, 1987, revised and clarified April 18, 1991. This criteria is summarized in Table 3.

The analytical results of the indoor air samples were compared to the National Institute of Occupational Safety and Health Recommended Exposure Limit for PCBs. This criteria is summarized in Table 4.

**Soil Analytical Results**

A total of six soil borings were advanced and sampled beneath the building floor with 54 soil samples collected and submitted for laboratory analysis of PCB Aroclors by Method 8082 and two soil samples collected and submitted for laboratory analysis of PCB homolog by Method 680. A summary of the soil analytical results is presented in Table 1 and copies of the laboratory analytical reports are provided in Attachment E. The soil boring locations are presented on Figure 1.

Based on the analytical results, 43 of the 54 samples contained PCBs above the industrial direct contact RCLs for Arcolor 1242 or Aroclor 1248 of 0.744 mg/kg, 42 of the 54 samples contained PCBs above the U.S. EPA high occupancy cleanup level of 1 mg/kg, and 36 of the 54 samples contained PCBs above the TSCA disposal limit of 50 mg/kg. These locations are presented on Figure 3.

The objective of the supplemental activities was to document the concentrations of PCBs beneath the main Site building as requested by the U.S. EPA. The highest

PCB concentrations are located adjacent to the historical concrete trench located in the middle of the facility, running north to south. Figure 4 shows a cross-section with total detected PCBs in soil beneath the building along the historical trench location from north to south.

Additionally, the Subsurface Work Plan contained a provision for additional PCB laboratory analysis of select soil samples by PCB homolog Method 680. The results of the homolog analysis were compared to the PCB laboratory analytical results obtained with Method 8082 for the same soil samples. In each case, the PCB homolog analytical results were lower than the PCB Aroclor results reported by Method 8082. Thus, utilizing the PCB results by Method 8082 provides a conservative approach to the recommendations provided below. A summary of the PCB homolog analytical data for the two soil samples is presented in Table 1.

**Groundwater Analytical Results**

One groundwater sample was collected and submitted for analysis of dissolved PCBs by U.S. EPA Method 8082 on March 13, 2015. The groundwater results were not detected above the laboratory detection limits. A summary of the groundwater analytical results is presented in Table 2 and the laboratory report is provided in Attachment E.

**Wipe Analytical Results**

Results of the March 4, 2015, wipe samples were below the cleanup level in all 40 samples, with the exception of floor sample MKC-WIPE01-FLOOR and floor sample MKC-WIPE03-FLOOR. A summary of the wipe analytical results is presented in Table 3 and the laboratory report is provided in Attachment E. Floor sample MKC-WIPE01-FLOOR is located in the die Storage #2 area (Grid 1) and floor sample MKC-WIPE03-FLOOR is located along the base of the secondary containment structure for the 55-gallon steel drums (Grid 3) as shown on Figure 5.

Results of the April 2, 2015, wipe samples were below the cleanup level in all six samples, with the exception of floor sample MKC-WIPE03-FLOOR2 and floor sample MKC-WIPE05-FLOOR2. A summary of the wipe analytical results is presented in Table 3 and the laboratory report is provided in Attachment E. Floor sample MKC-WIPE03-FLOOR2 is located in the cardboard storage area (Grid 3) and floor sample MKC-WIPE05-FLOOR2 is located in the aisle way near the electrical panel (Grid 5) as shown on Figure 5.

**Indoor Air Analytical Results**

Results of the April 1, 2015, indoor air samples were below the criteria in all three samples. A summary of the indoor air analytical results is presented in Table 4 and the laboratory report is provided in Attachment E.

**Recommendations**

As shown on Figures 3 and 4, soil and groundwater PCBs have been delineated beneath the building. In general, the highest concentrations of total PCBs in soil are present along the historical trench at varying depths from 0 to 2 ft bgs up to approximately 23.5 ft bgs. This soil is present beneath 6 to 12 inches of concrete so there is no complete exposure pathway for direct contact. Therefore, no further soil activities will be completed.

In accordance with the Site groundwater monitoring program, Monitoring Well MW-28 will be sampled for dissolved PCBs on a semi-annual basis.

Based on the analytical results of the indoor air sampling activities, no additional indoor air sampling is required.

As shown on Figure 5, PCBs have been delineated along the floor of the manufacturing building based on the wipe sample results. There were no exceedances on the columns, walls, or equipment that were sampled. The following actions are recommended for the floor exceedances within the MKC manufacturing building:

- Installation of PCB markers to inform personnel that there are PCBs present that require special handling and disposal in accordance with 40 CFR 761. Inspection of PCB markers on a monthly basis to verify markers are intact, in good condition, and that information is visible.

- Implementation of PCB awareness program for MKC employees and contractors. The training session includes an overview of PCBs, the regulatory considerations surrounding their use, and the nature and extent of PCB concentrations detected at the Site. The training session will also cover the personal protective equipment and waste management standard operating procedures for MKC. Training sessions will be held for new employees and annual refresher training will be provided.

In cooperation with the WDNR and U.S. EPA, MKC will also evaluate the potential implementation of the following:

- Double wash/rinse of floors as shown on Figure 5 and in accordance with the requirements of the U.S. EPA's *Wipe Sampling and Double Wash/Rinse Cleanup as recommended by the Environmental Protection Agency PCB Spill Cleanup Policy* dated June 23, 1987, revised and clarified April 18, 1991.

- Double application of epoxy to floors as shown on Figure 5.

**Closing**

If you have any questions regarding this letter, please contact us at (414) 276-7742.

Sincerely,

ARCADIS U.S., Inc.

Trenna Seilheimer
Project Scientist

Christopher D. Kubacki, PE
Senior Engineer

Jennine L. Trask, PE
Project Manager

Attachments:

Table 1 – Summary of Interior Building Soil Analytical Results
Table 2 – Summary of Interior Building Groundwater Analytical Results
Table 3 – Summary of Interior Building Wipe Analytical Results
Table 4 – Summary of Interior Building Indoor Air Analytical Results

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Figure 1 – Interior Soil Boring and Monitoring Well Locations
Figure 2 – Interior Building Wipe and Indoor Air Sampling Locations
Figure 3 – Soil Locations Above TSCA Disposal Limit
Figure 4 – Interior Building Trench Cross Section with Soil Boring and Monitoring well Locations
Figure 5 – Approximate Location of Floor Concentrations Above Criteria

Attachment A Submittal Certification
Attachment B Soil Boring Logs and Abandonment Forms
Attachment C Well Construction and Well Development Form
Attachment D Wipe Sampling Log
Attachment E Laboratory Reports

Electronic Copies:
David Crass – Michael Best
Tony Koblinski – Madison Kipp
Alina Satkoski – Madison Kipp
Kenneth Zolnierczyk – U.S. EPA